the masonry gas uptake with an average temperature of 600°, thence into a long horizontal main constructed of steel plates, where its temperature drops to approximately 300°. The gas then flows down a vertical gas downtake to the underground gas flue, which it reaches with a temperature of 200°.

Assuming that the height of the masonry gas uptake is 9 m above the grate of the producer and that the producer gas has a weight of 1 kg 07 per cubic meter at 0°, the hydrostatic pressure of the gas at the top of the uptake will be

$coo = 9 1 . 29 ~Tinr) = 8 mm 64 of water.

\ -L T~ YY 3V

The average temperature of the gases in the downtake will be

In order *to force the hot gas down* through the vertical downtake there must be an initial pressure at the head of the downtake sufficient to overcome the hydrostatic pressure of the gases in the downtake with an average temperature of 250°.

The resistance due to the hydrostatic pressure in the downtake is

$5_2 50 = 9 (l . 29 - ^~^} = 6$ mm 57 of water.

According to the foregoing the hydrostatic pressure of the gas within the underground flue will be equal to

$d = 5_G oo--525o = 8. 64-6.57 = +2$ mm 07 of water.

As the frictional resistance of the gas mains and flues to the passage of the gas is generally less than 2 mm 07 of water, the Siemens " siphon " favors the " draft " of the gas producer. It is evident that the draft on the gas producer would be stronger if the length of the conduit were increased, as in this case the drop in temperature in the horizontal section would be greater.

The position of the horizontal gas main, at a considerable height above the grate of the gas producer, assures a pressure in the main somewhat higher than that of the atmosphere, and this constitutes a guarantee against the risk of explosions with gas producers operating without forced draft. On the contrary, a